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THIRD ANNUAL MEETING OF THE KENTUCKY SECTION.¹

The Third Annual Meeting was held at the University of Kentucky, Saturday, May 17, 1919, Professor E. L. REES presiding. The following papers were read: "A chart of mathematical history" by E. L. Rees, Univ. of Kentucky; "A problem in linkages" by H. P. Pettitt, Univ. of Kentucky (by invitation); "What is a curve?" by C. H. Richardson, Georgetown College (by invitation); "A problem in maxima and minima" by H. H. Downing, Univ. of Kentucky; "Syzygies obtained from the associative law for $n = 2$ " by G. W. Smith, Univ. of Kentucky; "The catenoid the only minimal surface of revolution" by W. W. Elliott, Univ. of Kentucky; "Present day tendencies in the analytics course" by P. P. Boyd, Univ. of Kentucky; "Review of Shaw's *Philosophy of Mathematics*" by J. M. Davis, Univ. of Kentucky.

Professor C. G. CROOKS, Center College, Danville, Ky., was elected chairman and Dr. G. W. SMITH, University of Kentucky, was elected secretary-treasurer. After the meeting the members were the guests of the retiring chairman, Professor REES, at a very delightful luncheon served in the rooms of the University Cafeteria.

H. H. DOWNING, *Secretary-Treasurer*.

 THE NATIONAL COMMITTEE ON MATHEMATICAL REQUIREMENTS.

The General Education Board has appropriated the sum of sixteen thousand dollars for the use of the National Committee on Mathematical Requirements. This Committee was appointed some three years ago by the Mathematical Association of America for the purpose of giving national expression to the movement for reform in the teaching of mathematics in secondary schools and colleges, which movement had for many years been actively furthered by various sectional organizations of teachers throughout the country.

According to plans adopted, one college man and one secondary school man are to devote their whole time to the work of the Committee for one year beginning July 1, 1919. Professor J. W. YOUNG, of Dartmouth College, has been selected as the college man in question. He will act as chairman and treasurer of the Committee and will have general charge of the work with headquarters in Hanover, N. H. Mr. J. A. FOBERG, of the Crane Technical High School of Chicago, is the representative of the secondary schools who will devote his whole time to work of the Committee. He will act as vice-chairman and secretary of the Committee with headquarters in Chicago. The other members of the Committee are Professors A. R. CRATHORNE, of the University of Illinois,

¹ This section was formerly the Mathematics Section of the Association of Kentucky Colleges which held eight annual meetings.

E. H. MOORE, of the University of Chicago, C. N. MOORE, of the University of Cincinnati, D. E. SMITH, of Columbia University, and H. W. TYLER, of the Massachusetts Institute of Technology, representing the colleges; and Miss VEVIA BLAIR, of the Horace Mann School, New York, Mr. G. W. EVANS, of the Charlestown High School, Boston, and Mr. RALEIGH SCHORLING, of the Lincoln School, New York, representing the secondary schools. Two or three additional members representing secondary schools will be added to the Committee in the near future.

Two specific problems face the Committee: (1) the revision of secondary school and college courses in mathematics; (2) the revision of college entrance requirements in mathematics. The latter problem has been referred to the Committee not only by the Mathematical Association of America but also by the Council of the American Mathematical Society.

Detailed plans of the Committee are in the formative stage. Certain of its functions seem to be clear now, however. It must complete the reports already under way, it must formulate for discussion general principles which are to govern the proposed revisions (1) and (2) referred to above, it must elaborate, also for discussion, the detailed application of such general principles, it must establish intimate contact with all organizations and agencies throughout the country having similar problems in hand, it must do all it can to organize a nation-wide discussion of these problems and seek to coordinate the results of such discussion. Pending the adoption of definite plans for action the chairman or vice-chairman will welcome any suggestions looking toward the most effective methods of procedure.

A THEORY AND GENERALIZATION OF THE CIRCULAR AND HYPERBOLIC FUNCTIONS.

By A. F. FRUMVELLER, Marquette University.

There is a striking lack of symmetry and elegance in the usual treatment of hyperbolic functions; the formulas are one-sided, some admitting i , others not, in a manner apparently arbitrary. An air of unreality is added by the fact that they are made to depend essentially upon

$$e^{ix} = \cos x + i \sin x = \sum_{\infty} \frac{(ix)^n}{n!},$$

whose small geometric content entirely evaporates after a few transformations; many authorities frankly abandon the geometric phase altogether, and treat the whole topic as an exercise in the algebra of complex numbers. Long ago the writer became convinced that the one-sidedness of the formulas with respect to i arose from building the theory on too narrow a foundation; the circle after all is not a primary curve, but merely an ellipse in which the axes have accidentally become equal. If this be so, circle trigonometry is only a minor case of the